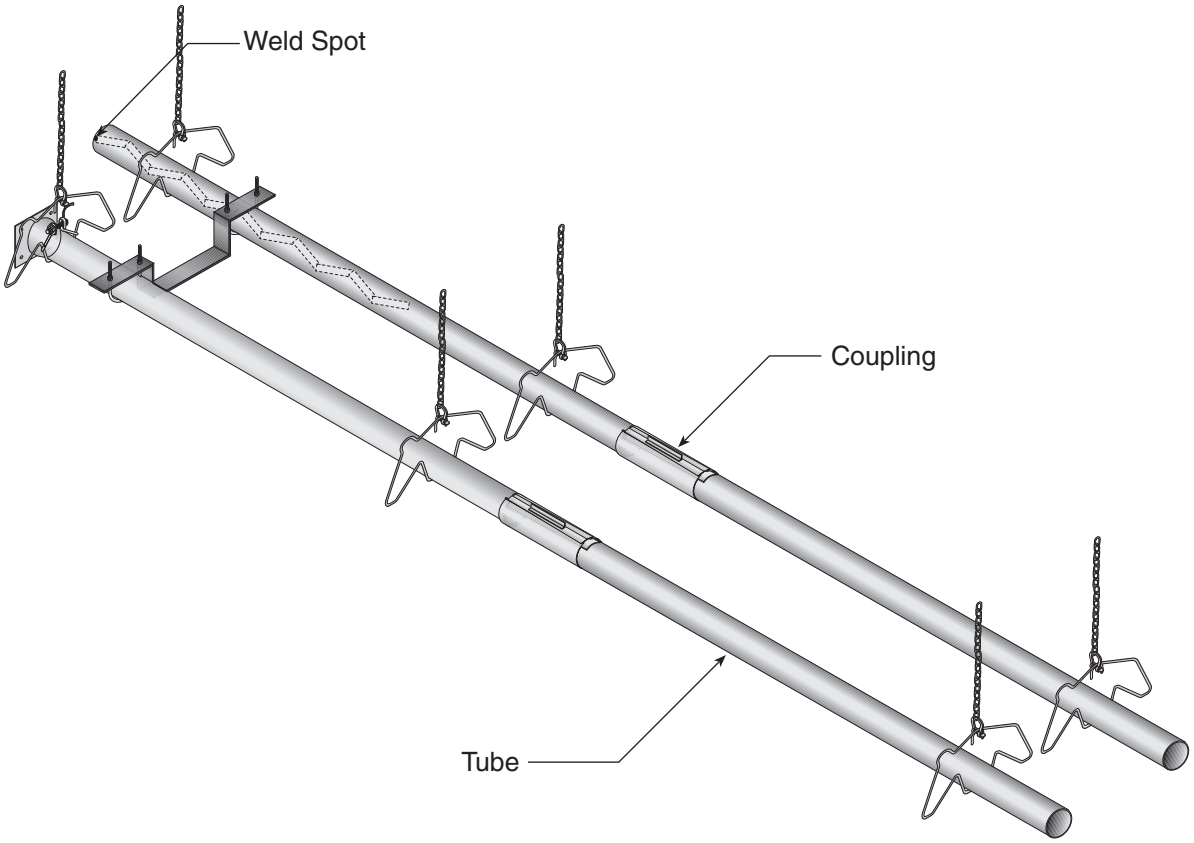
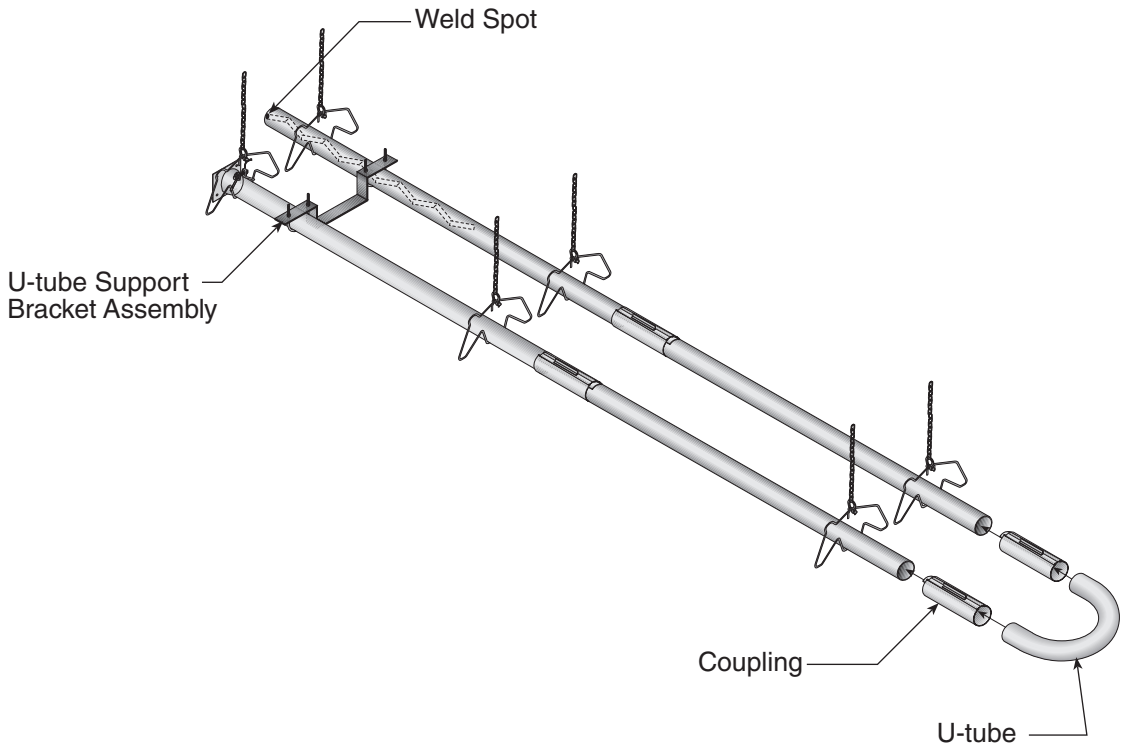
Step 7.6 Tube Installation



Step 7.7 U-Tube Installation



Description	Part Number
Coupling	01329600
Slide Bar/Coupling Lock	01329700
U-Tube	01335901

Step 7.8 Reflector Installation

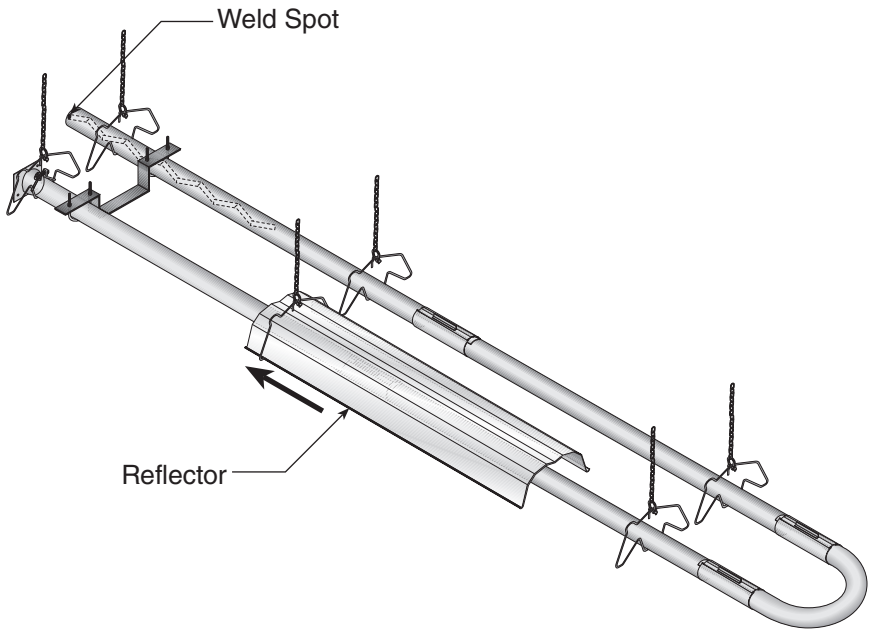
⚠ WARNING

Fire Hazard

Support reflector with reflector hanger and support strap.

Reflector must not touch tube.

Failure to follow these instructions can result in death, injury or property damage.



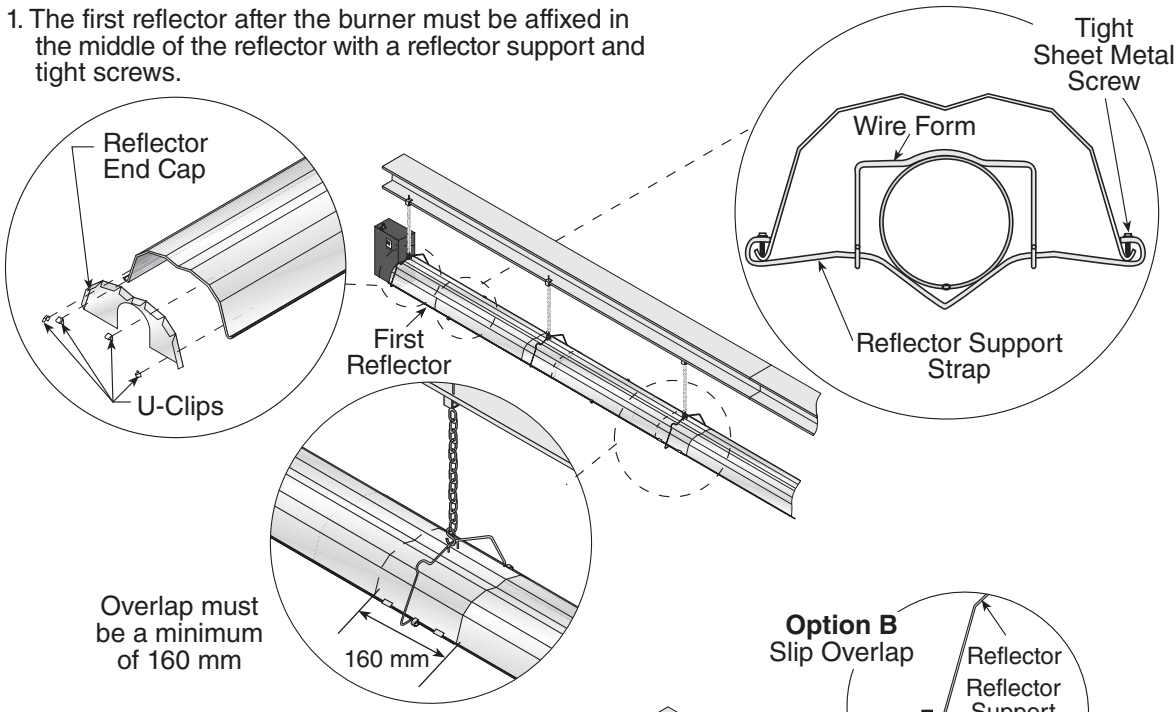
Description	Part Number
Reflector	02750303

Step 7.8.1 Reflector, U-Clip and Reflector Support Installation

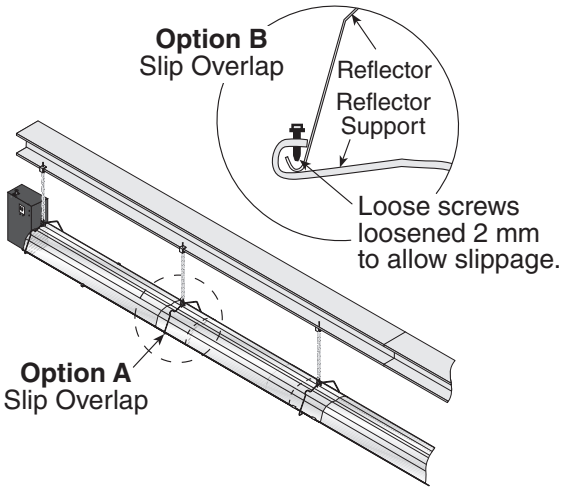
The pictorial drawings of the heater construction in *Section 6* are schematic only and provide a general guideline of where hangers, reflector supports and U-clips are to be installed.

To ensure proper expansion and contraction movement of the reflectors, a combination of U-clips and reflector supports are used. The positioning of reflector supports and U-clips depend on the individual installation. Use either pop rivets or sheet metal screws instead of U-clips when installing end caps and joint pieces in areas where impact and high wind may be a factor. The following rules must be observed:

1. The first reflector after the burner must be affixed in the middle of the reflector with a reflector support and tight screws.

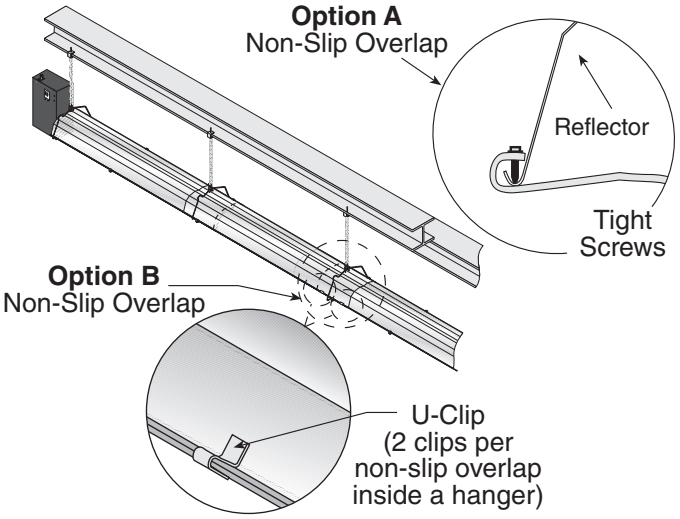


2. The overlap at the first and second reflector is a slip overlap. Thereafter, every third reflector joint is a slip overlap. A slip overlap is achieved by either:
   a.) both reflectors lay inside a hanger. (no reflector support needed).
   b.) using a reflector support with loose screws at the reflector overlap.



3. The remaining reflector overlaps require a non-slip overlap connection. To affix the reflectors together in a non-slip overlap either:
   a.) use reflector support and tight screws.
   b.) if both reflectors lay inside a hanger, u-clips or sheet metal screws may be used.

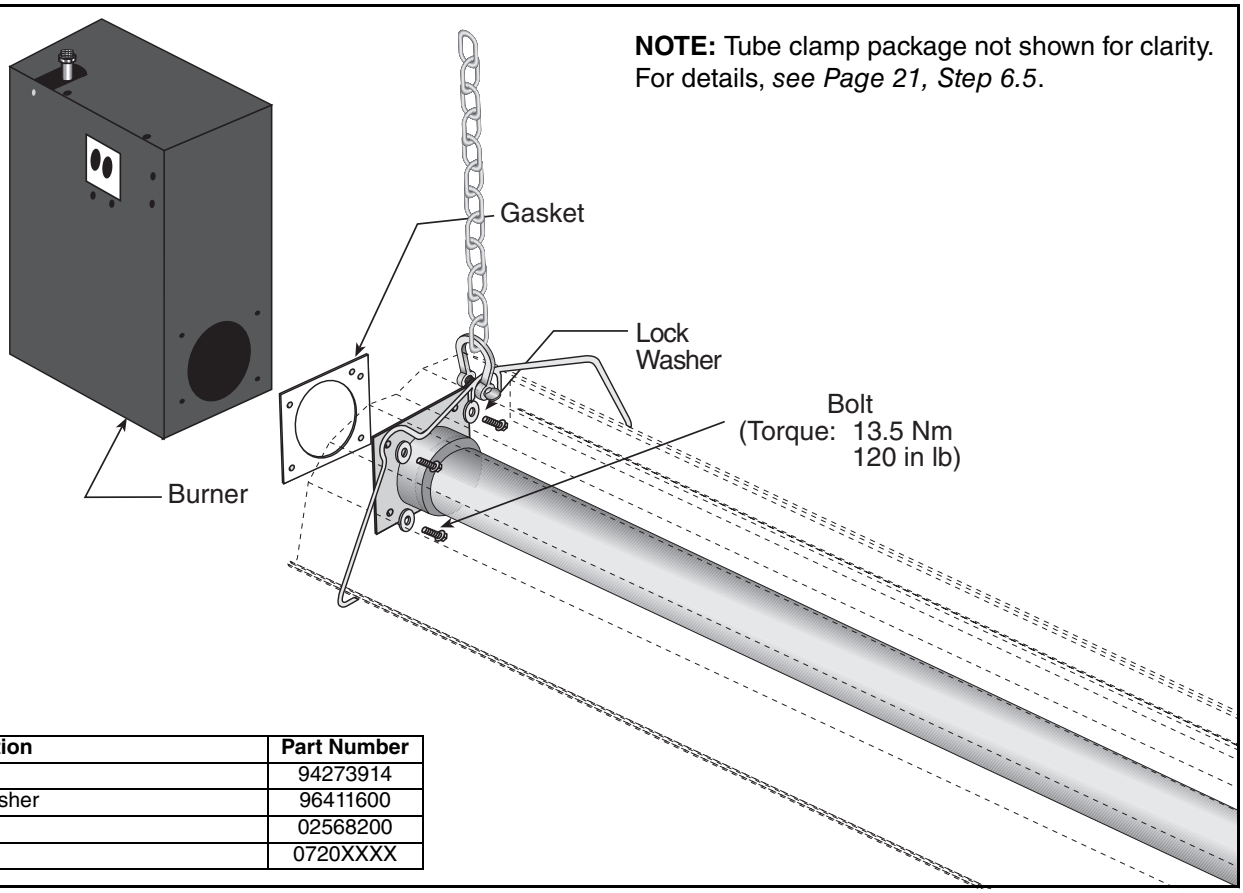
   This section of three reflectors joined together must be affixed to the tube with at least one reflector support with tight screws.



Description	Part Number
Reflector Support Package	**03050010**
Wire Form	91908004
Reflector Support Strap	03050000
Screw #8 x 3/4 (3.9 x 19mm)	94320812
U-Clip Package	91107720
Reflector End Cap	027508XX

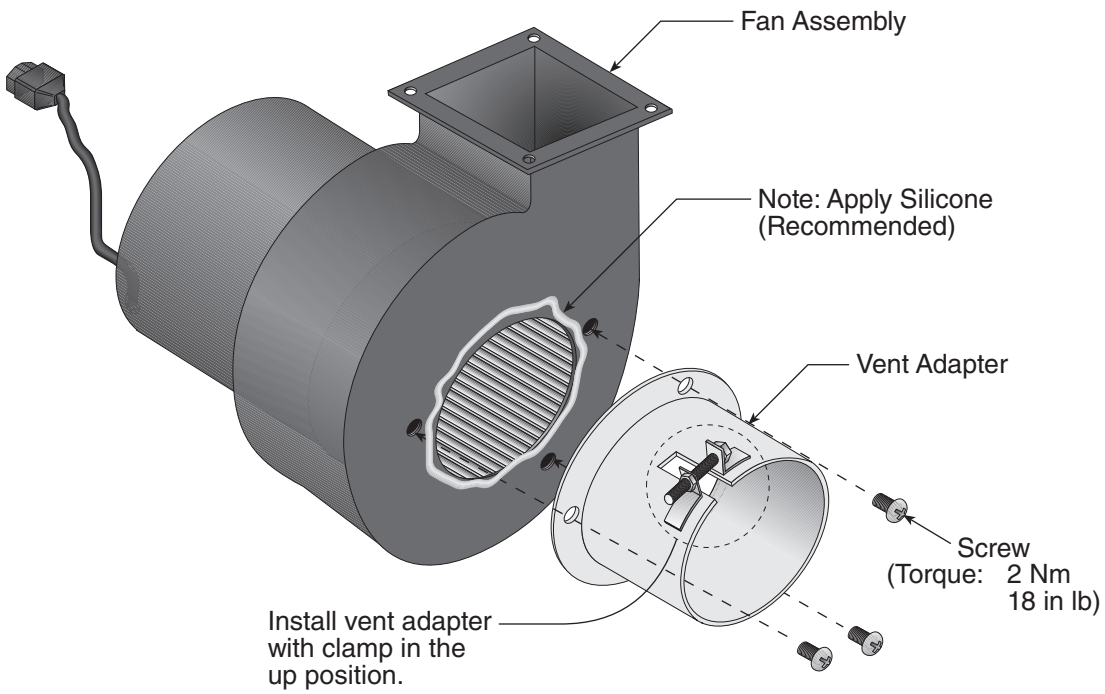
SECTION 9: BURNER & FAN INSTALLATION

Step 9.1 Burner Installation



Description	Part Number
Bolt	94273914
Lock Washer	96411600
Gasket	02568200
Burner	0720XXXX

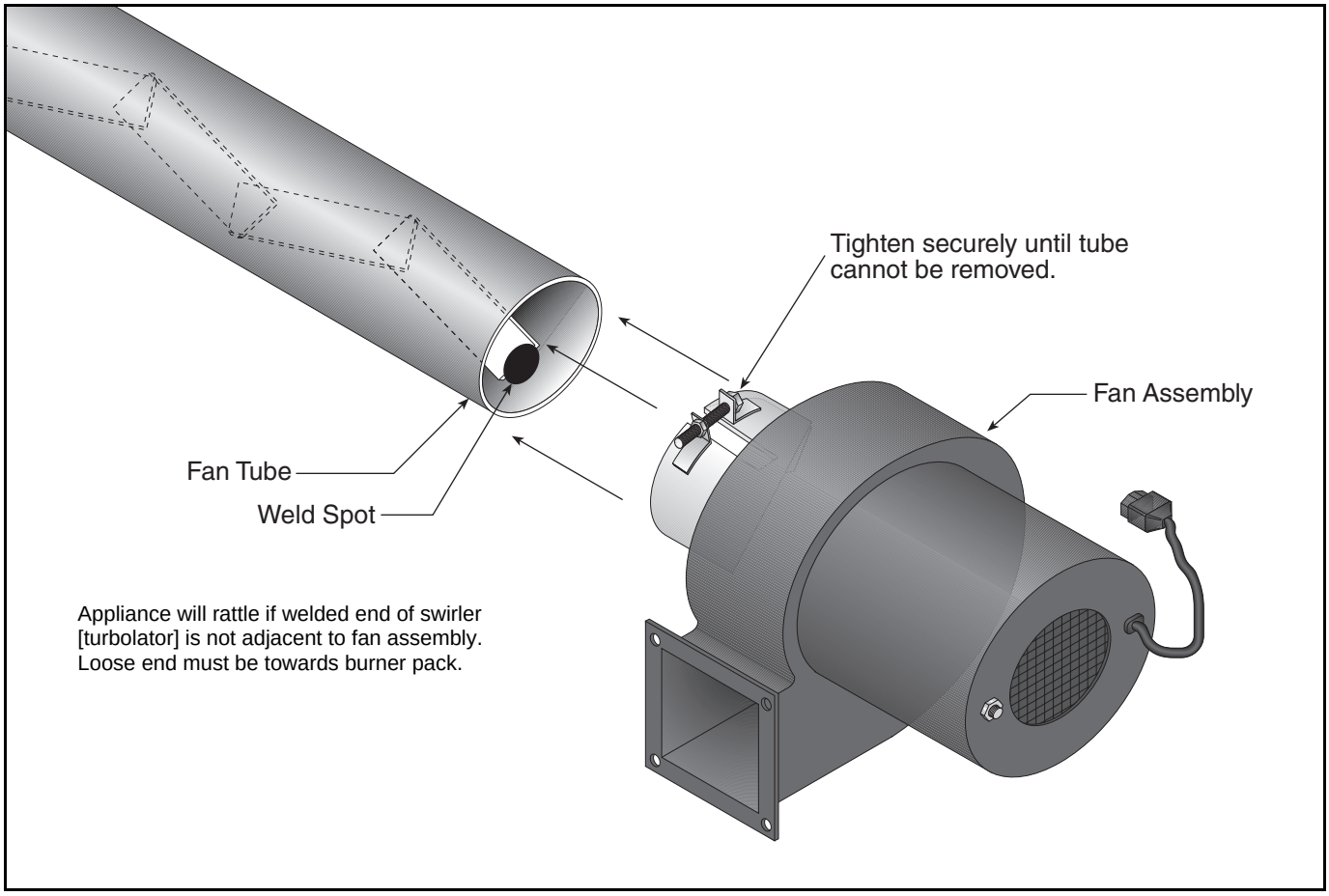
Step 9.2 Fan Assembly



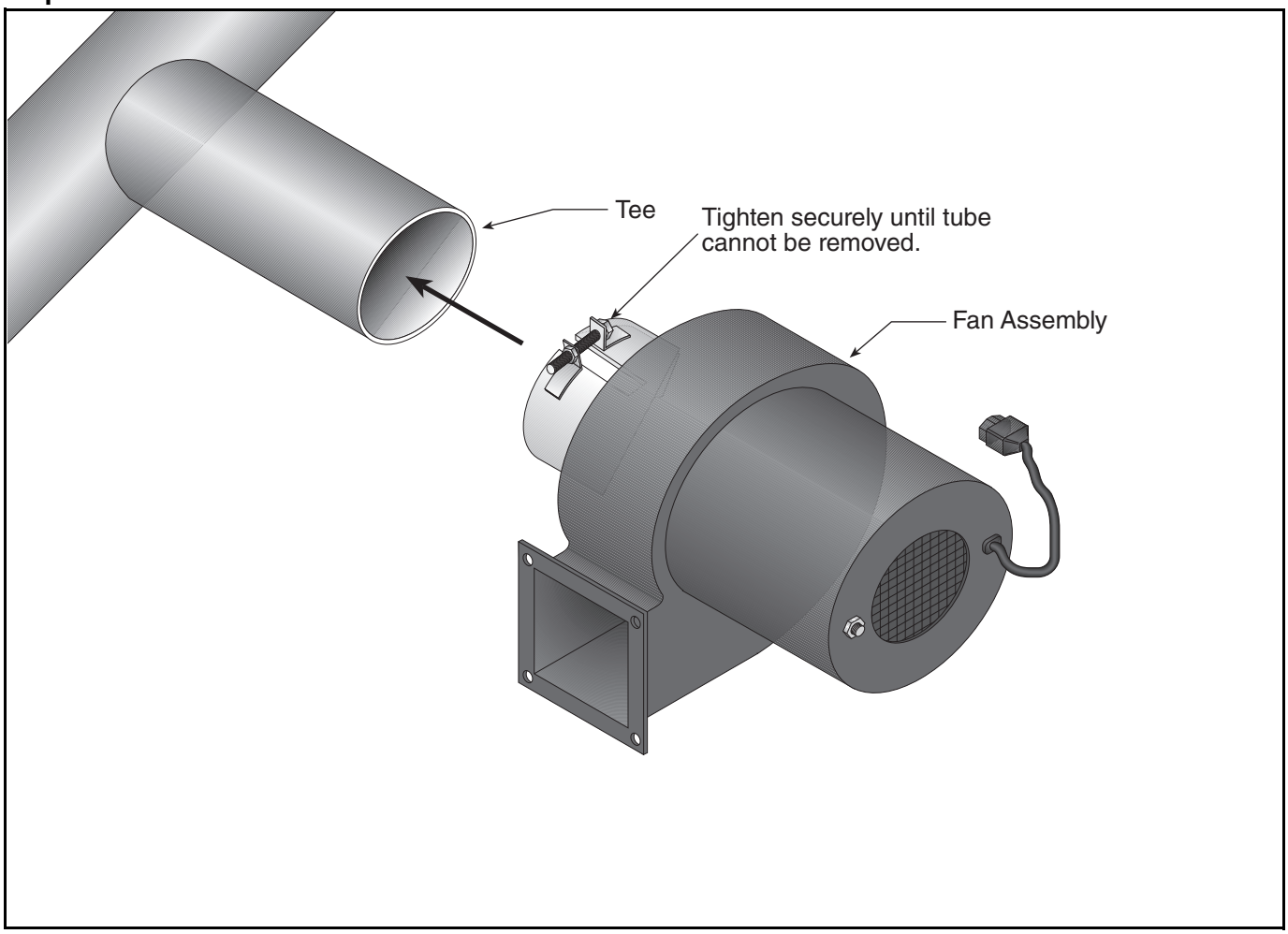
Description	Part Number
Fan Assembly	072600XX
Vent Adapter	9071060X
Screw	E00075XX

[Note that pages 35 & 36 have been deleted].

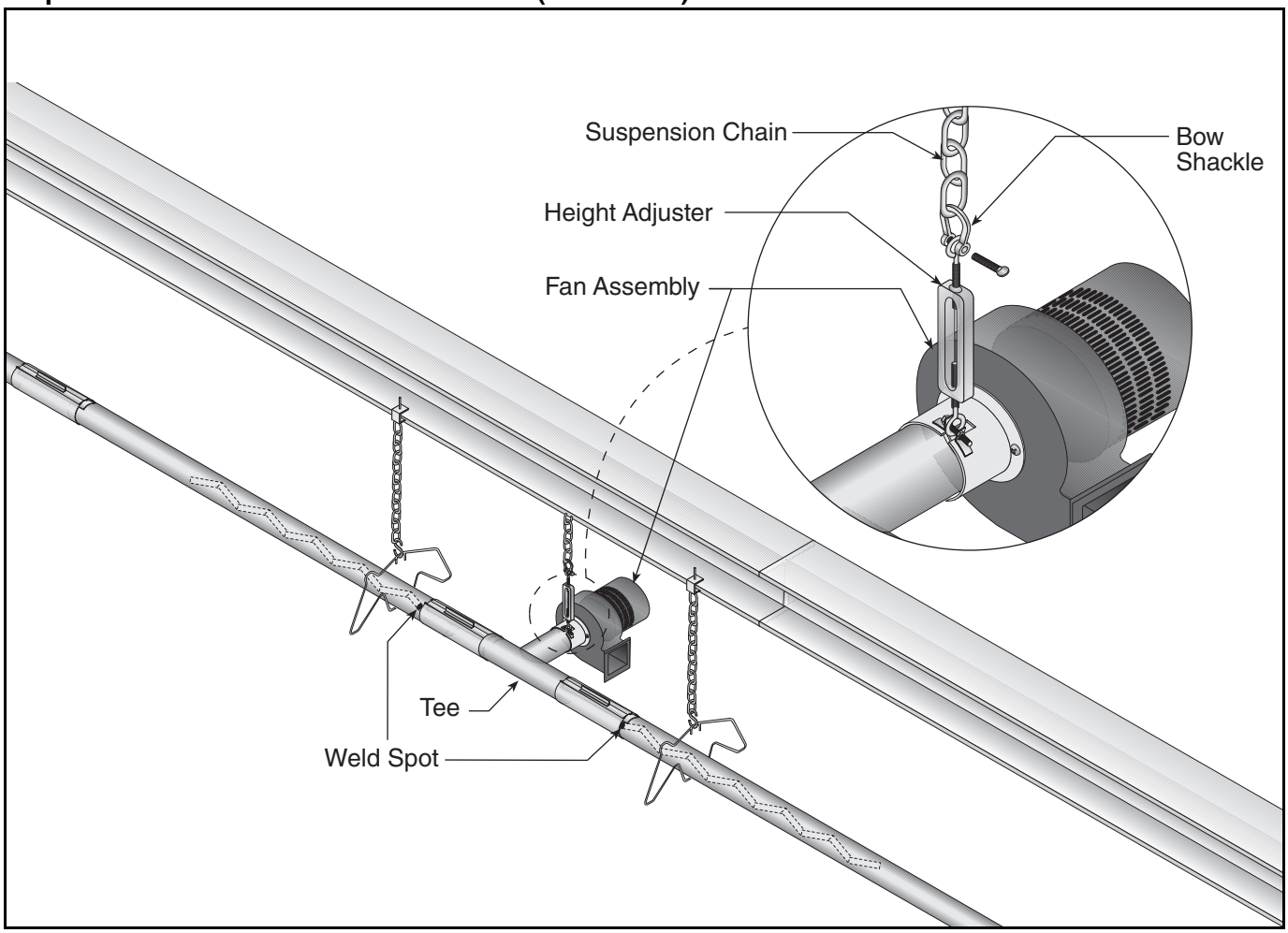
9.3 Linear & U-Tube Fan Installation


Tighten securely until tube
cannot be removed.
Fan Assembly
Fan Tube
Weld Spot
Appliance will rattle if welded end of swirler
[turbolator] is not adjacent to fan assembly.
Loose end must be towards burner pack.

Step 9.4 Double Linear Fan Installation



Step 9.4.1 Double Linear Fan Installation (Continued)



SECTION 10: OPTIONAL HEATER ACCESSORIES

⚠ WARNING

Cut/Pinch Hazard

Wear protective gear during installation, operation and service.

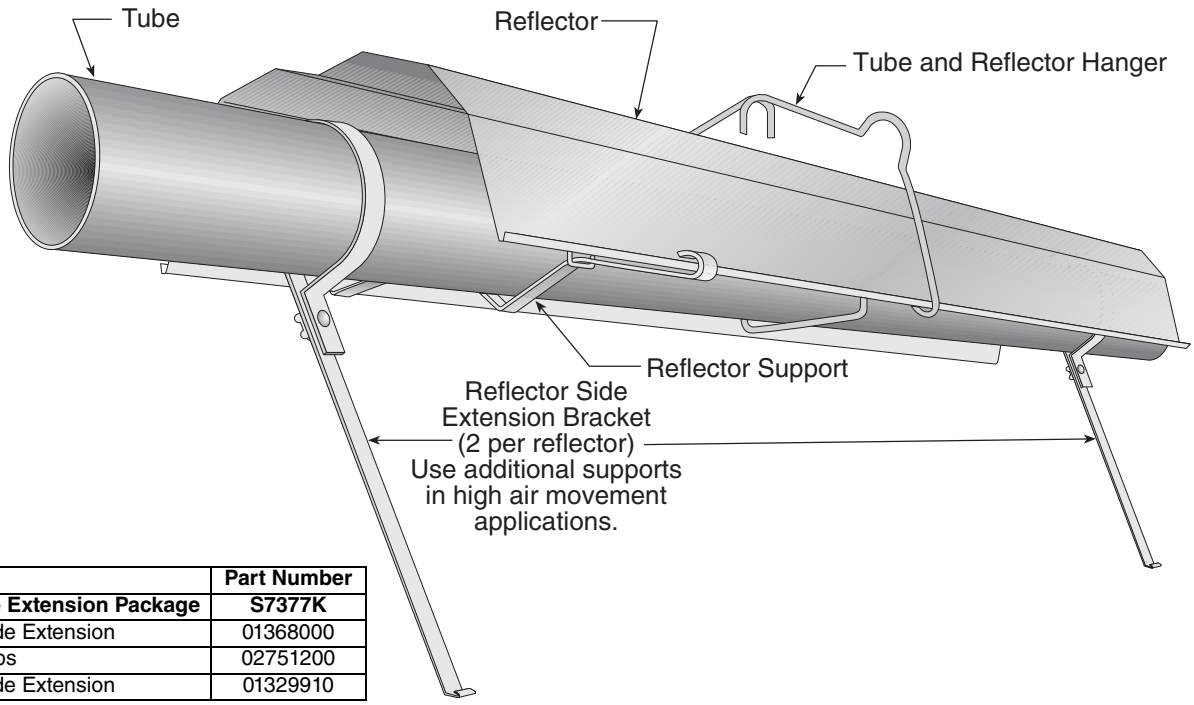
Edges are sharp.

Failure to follow these instructions can result in injury.

[Note that page 40 has been deleted].

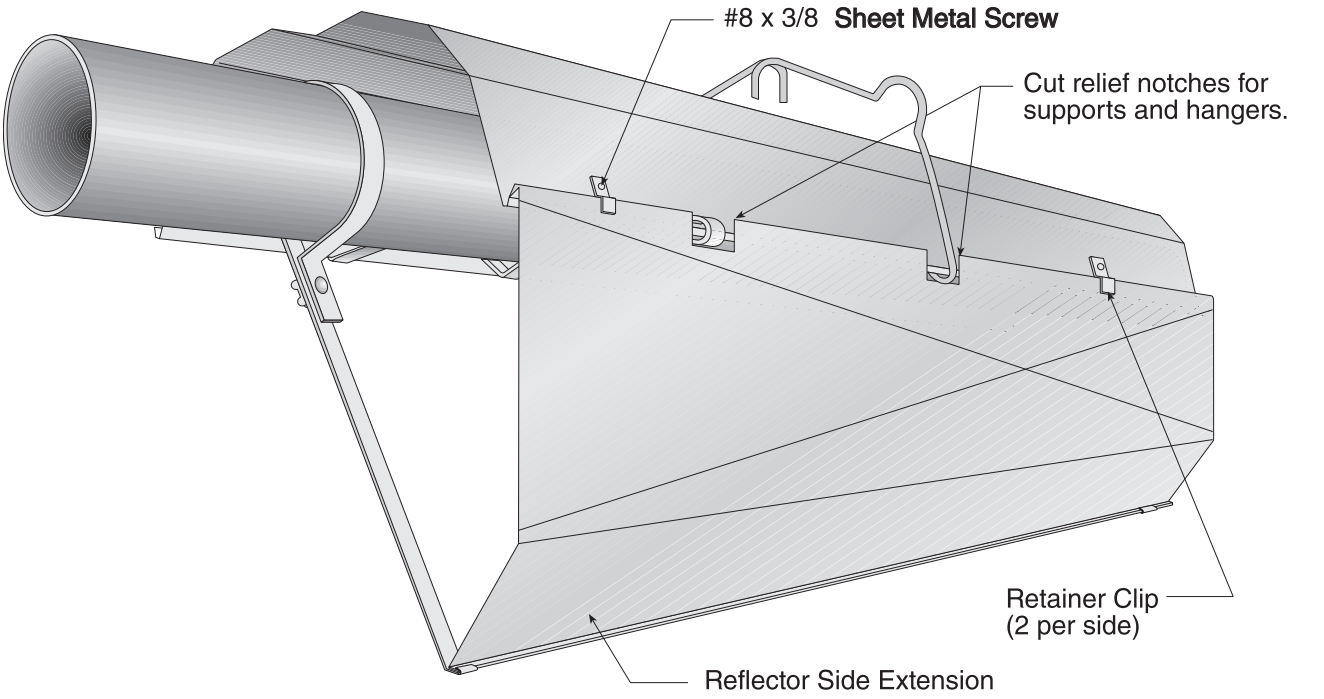
10.1 Reflector Side Extension Installation

Step 10.1.1 Bracket Installation



Description	Part Number
Reflector Side Extension Package	**S7377K**
Reflector Side Extension	01368000
Retainer Clips	02751200
Reflector Side Extension	01329910

Step 10.1.2 Side Reflector Installation



10.2 U-Tube Cover Installation

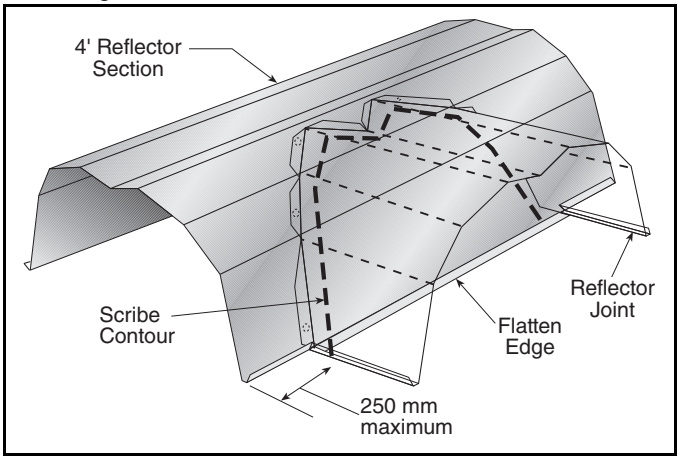
The package contains two reflector joint pieces (P/N 02750901), one 8' reflector and 18 x #8 sheet metal screws. Install the U-tube cover using the following procedure.

Step 10.2.1

Cut the 8' reflector in half to be used on both sides to cover the U-tube.

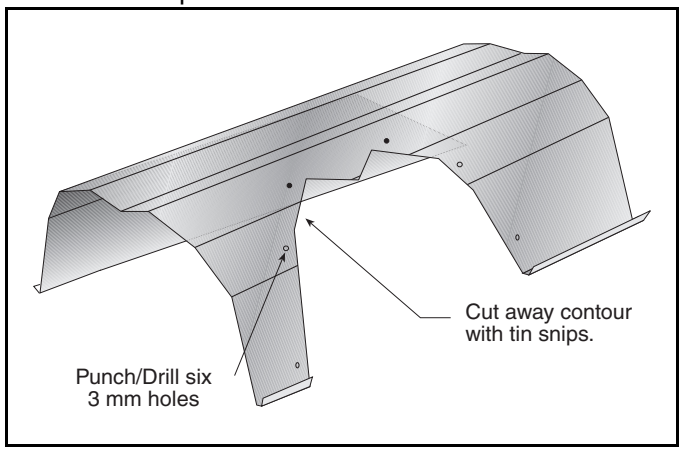
Step 10.2.2

Flatten 4' reflector edge where joint piece matches. Put a mark on the 4' reflector, directly over the tube center. Center the accessory joint piece on the mark and scribe its contour on the reflector. Scribe the location of the mounting holes.



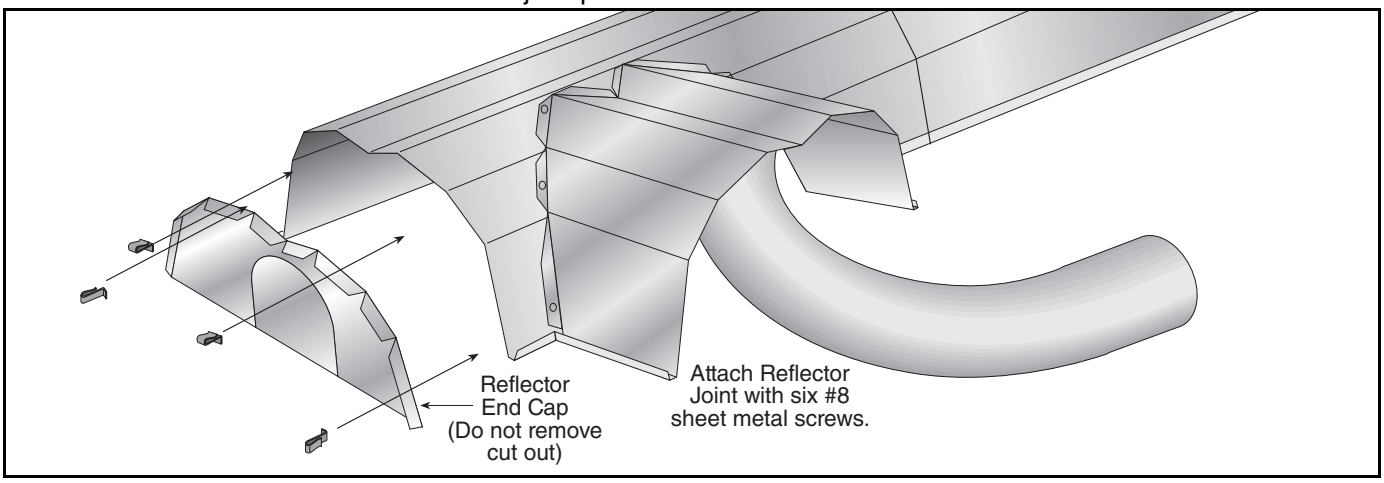
Step 10.2.3

Cut away the reflector to clear the tube, leaving about 1" of material inside the scribed contour to attach the accessory joint. Drill or punch six 3 mm diameter holes in reflector in the positions shown below.



Step 10.2.4

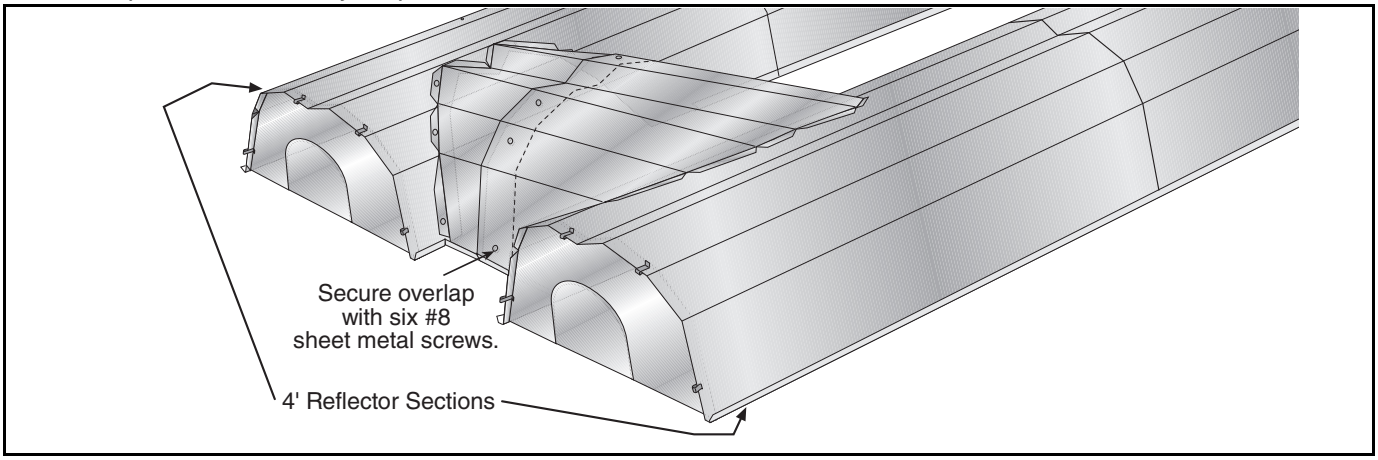
Use six #8 sheet metal screws to attach the joint piece.



Repeat *Step 10.2.1 through Step 10.2.4* to attach the reflector joint piece on the other reflector.

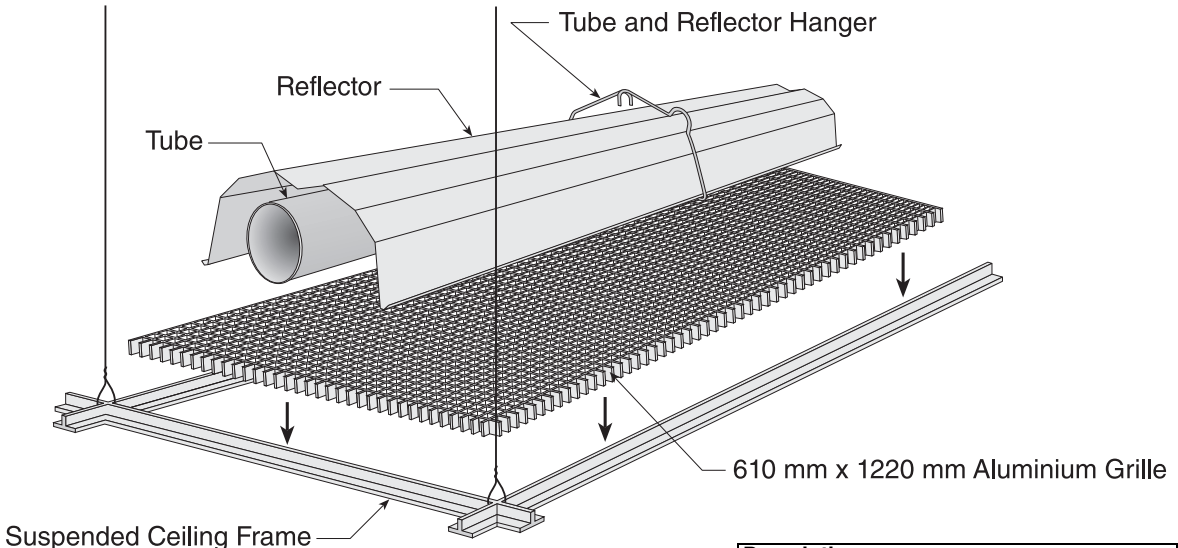
Step 10.2.5

The overlap of both reflector joint pieces is attached with six #8 sheet metal screws.



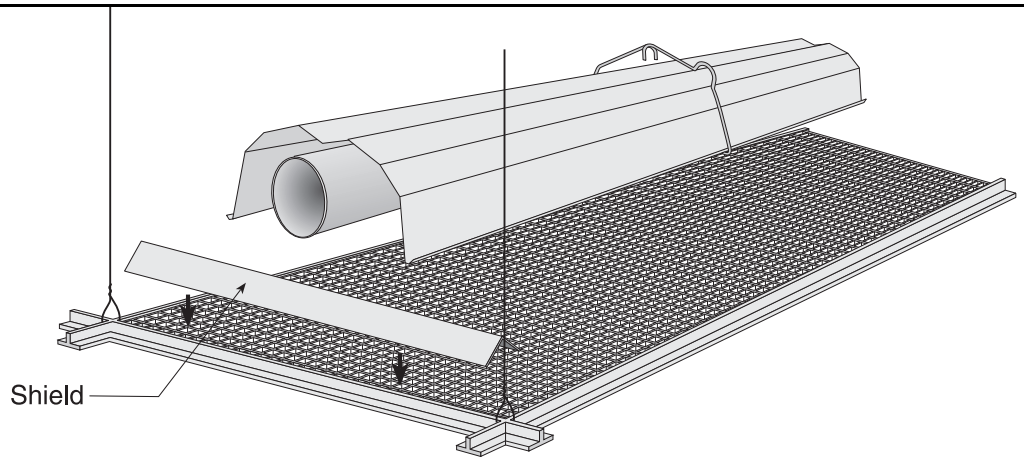
10.3 Decorative Grille Installation

Step 10.3.1 Grille Installation



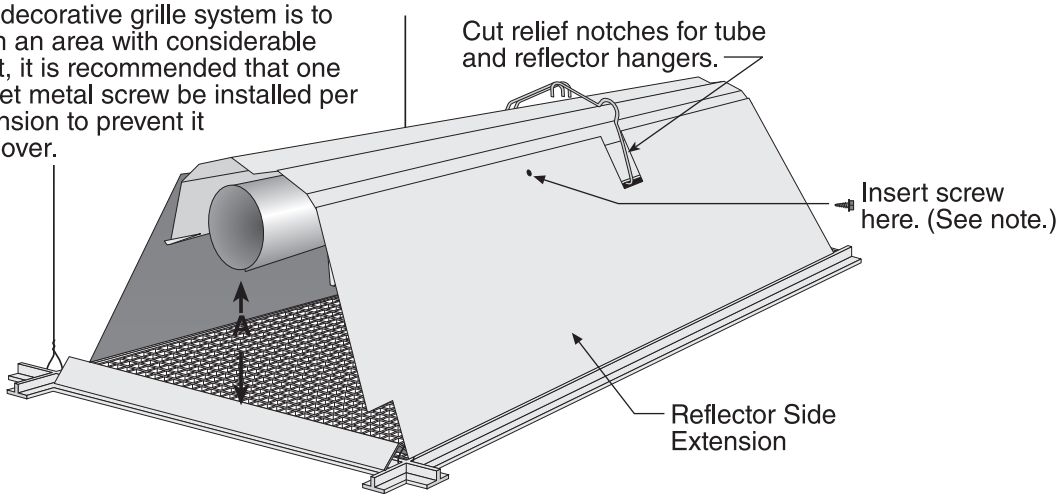
Description	Part Number
Aluminium Grille 610 mm X1220 mm	91407000

Step 10.3.2 Frame Shield Installation



Step 10.3.3 Reflector Side Extension Installation for Decorative Grilles

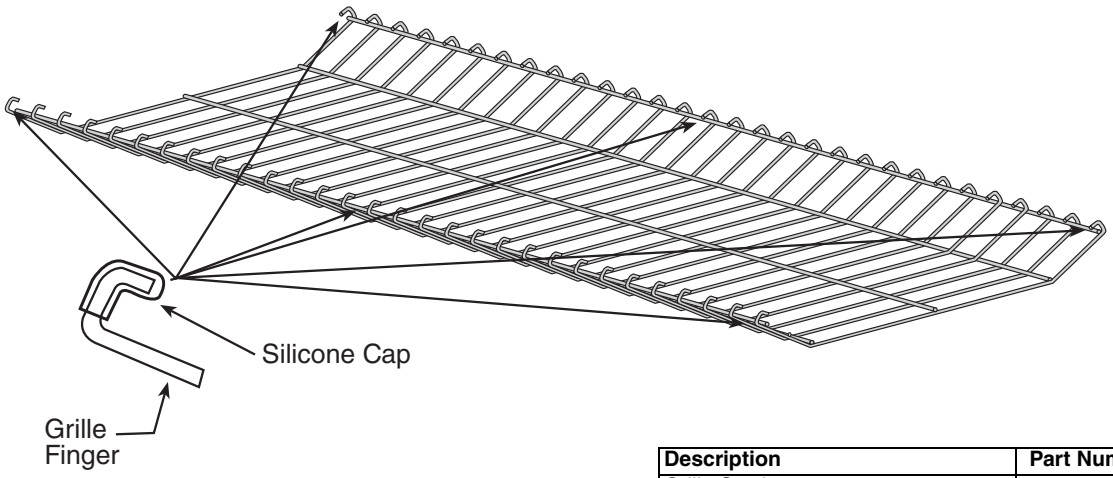
NOTE: If the decorative grille system is to be installed in an area with considerable air movement, it is recommended that one #8 x 3/8" sheet metal screw be installed per reflector extension to prevent it from blowing over.



Distance "A"		Extension	
Minimum	Maximum	Part No.	Width
40	150 mm	01370408	200 mm
150	260 mm	01370412	300 mm
260	370 mm	01370416	400 mm

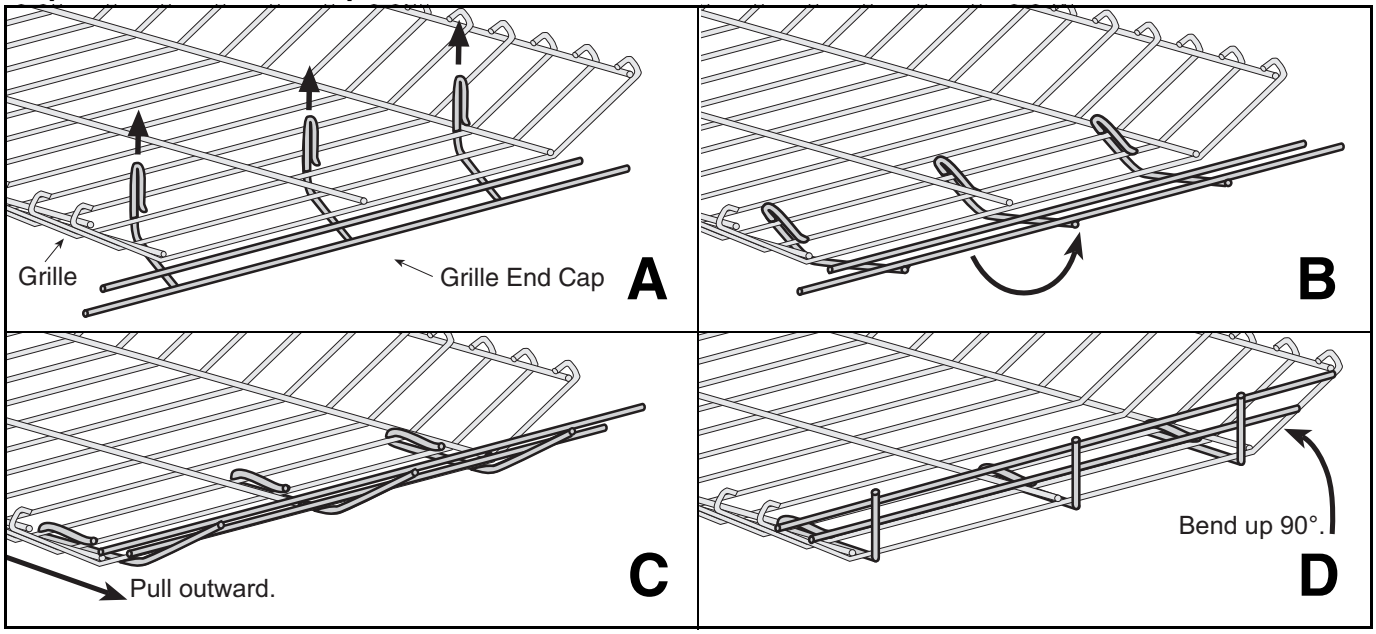
10.4 Protective Grille Installation

Step 10.4.1 Silicone Cap Installation

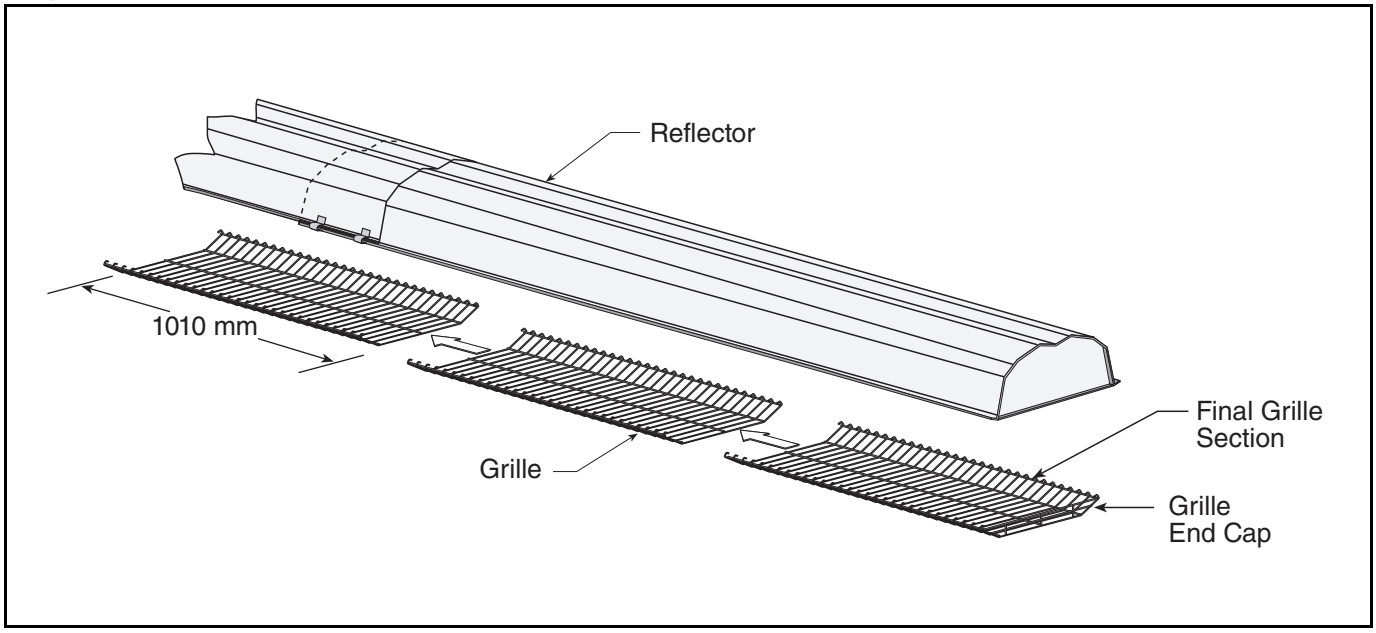


Description	Part Number
Grille Section	08050001
Grille End Cap	08050002
Silicone Cap	91915951-6P

Step 10.4.2 Grille End Cap Installation

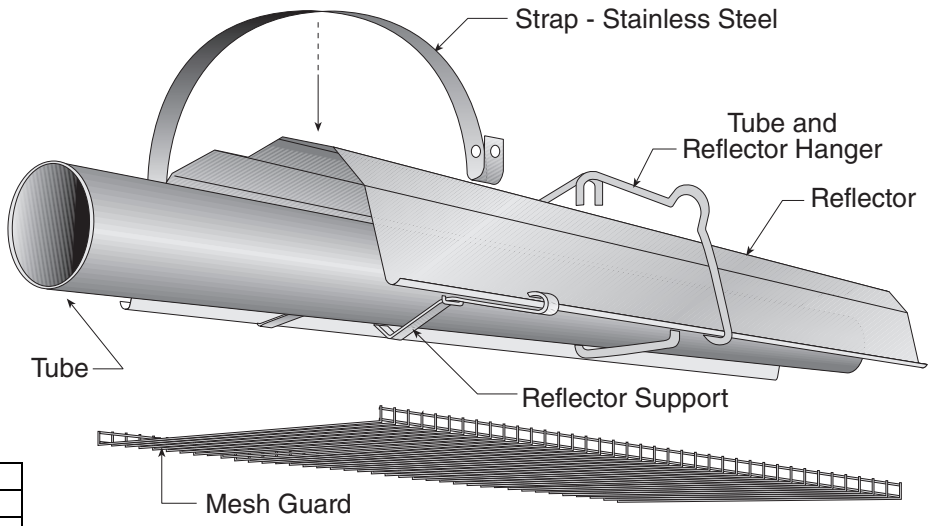


Step 10.4.3 Grille Installation



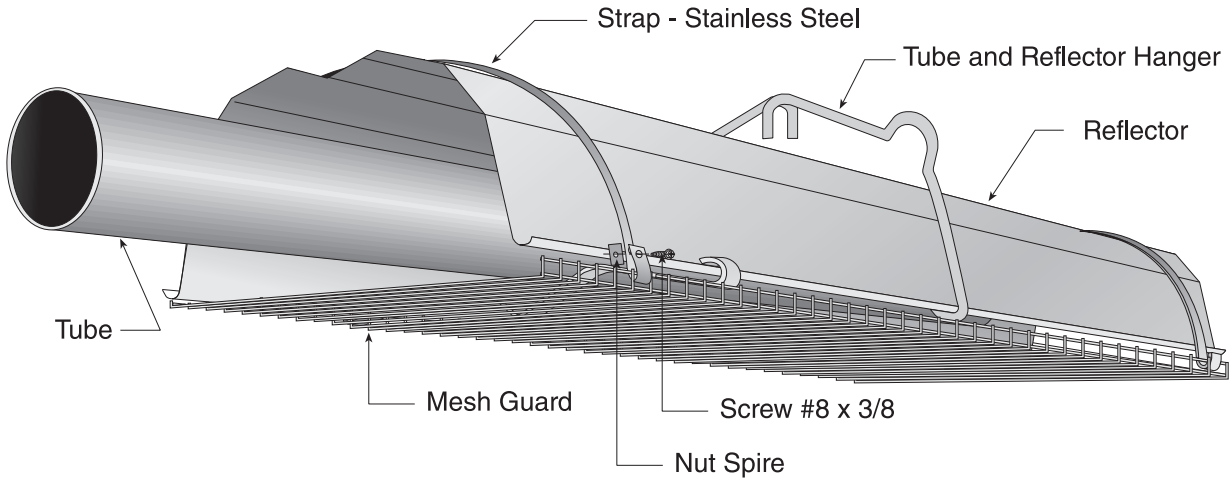
10.5 Sports Hall Guard Installation

Step 10.5.1 Grille Installation



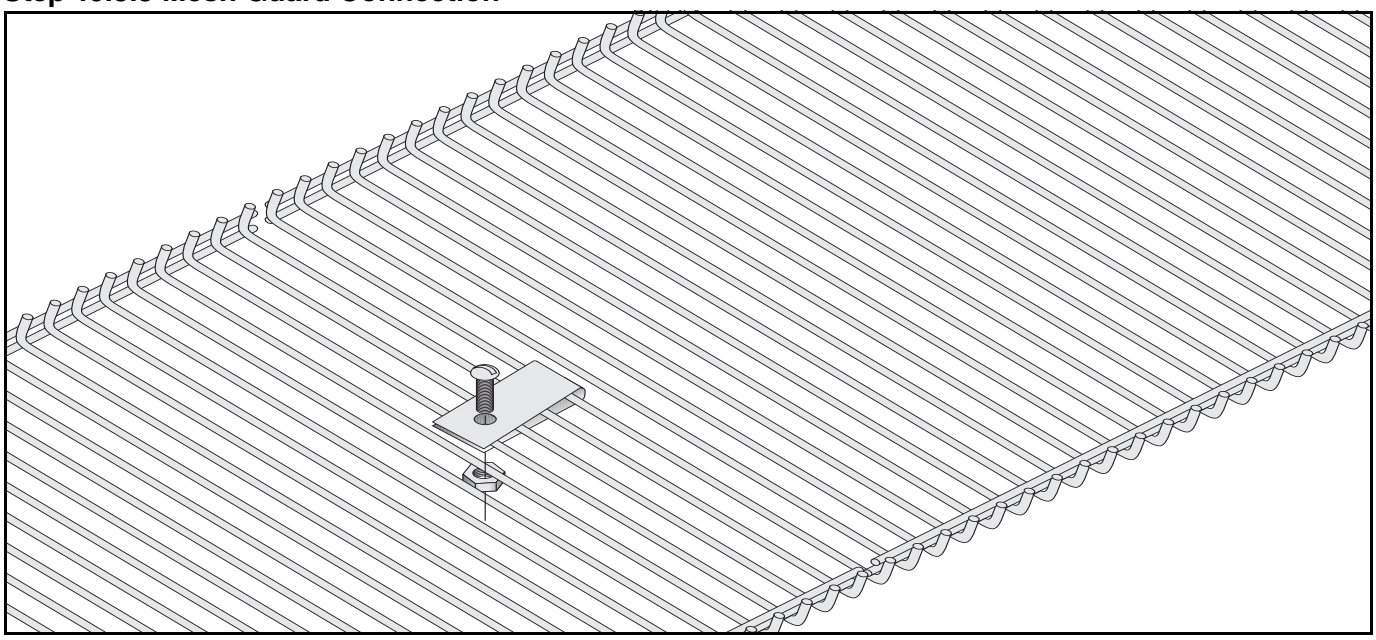
Description	Part Number
Mesh Guard 2438 mm	E0009855
Mesh Guard 1524 mm	C2329B
Strap Stainless Steel	S5218W

Step 10.5.2 Fastener Installation



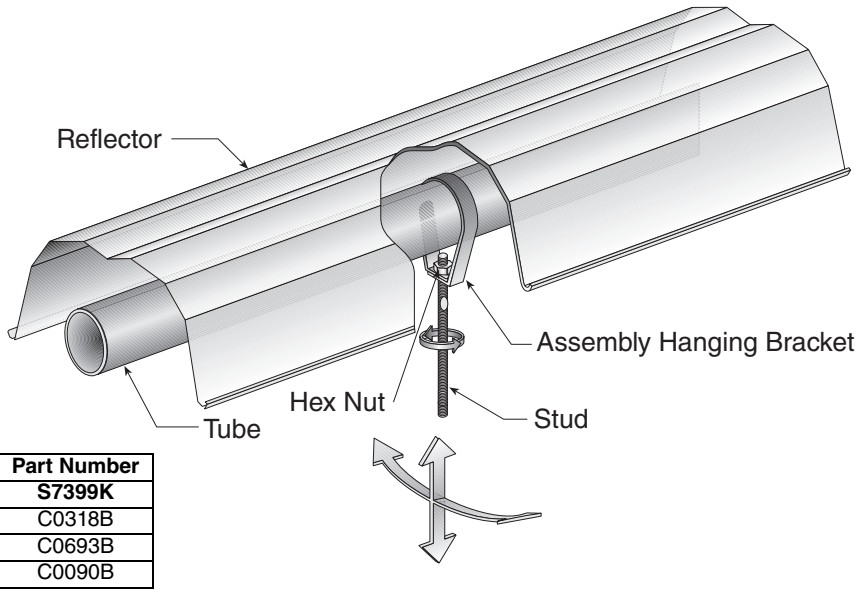
Description	Part Number
Nut Spire	C1088B
Screw #8 x 3/8	C1089B

Step 10.5.3 Mesh Guard Connection



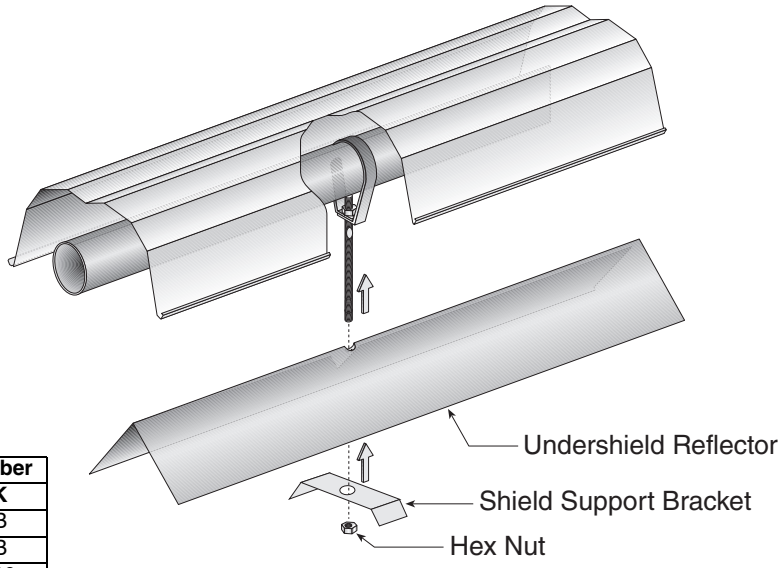
10.6 Undershield Installation

10.6.1 Hanger Installation



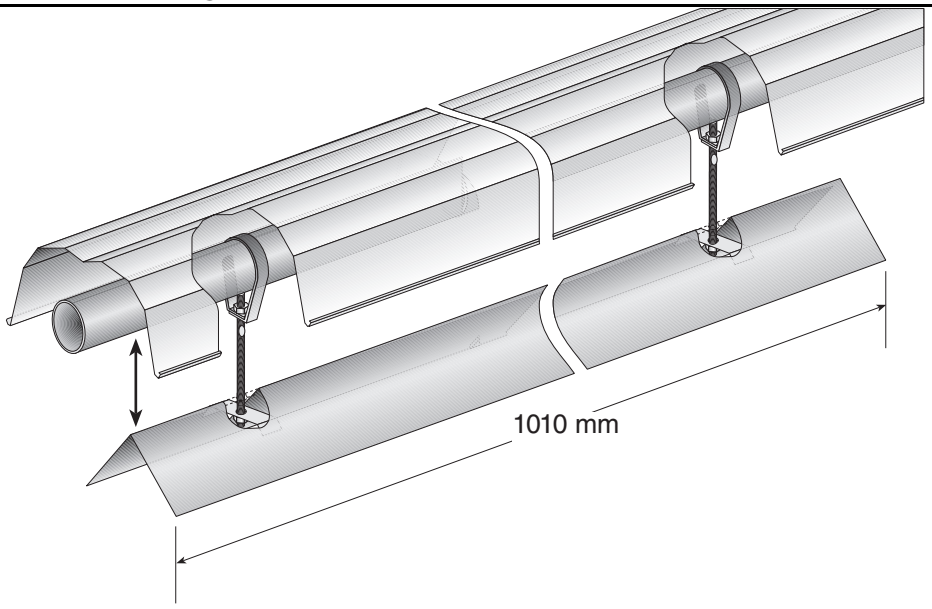
Description	Part Number
Undershield Reflector Package 101 cm	**S7399K**
Assembly Hanging Bracket	C0318B
Stud M6 x 90	C0693B
Nut M6	C0090B

10.6.2 Undershield Installation



Description	Part Number
Undershield Reflector Package 1010 mm	**S7399K**
Undershield Reflector 1010 mm	C0521B
Nut M6	C0090B
Shield Support Bracket	02751700

10.6.3 Adjust Undershield Height



10.7 Wall Mounting

Install wall mounting brackets at the height shown in the layout drawing provided by the estimator. Space wall mounting brackets and hangers as indicated by dimensions d, e and f (u-tube) in the relevant layout overview drawing for your heater. For linear heaters *see Page 15, Figure 20*, for double linear heaters *see Page 18, Figure 22* and for U-tube heaters *see Page 28, Figure 24*.

10.7.1 Hardware Installation

The wall mounting brackets must be attached to a suitable wall through all mounting holes. Screw sizes less than M8 (5/16") may not be used. In order for the wall mounting brackets to adequately carry the weight of the heater, it must be installed with best building practice.

Model	Quantity of Wall Mounting Brackets	Model	Quantity of Wall Mounting Brackets
BH15UT	2	BH15ST	3
BH20UT	3	BH20ST	4
BH25UT	3	BH25ST	4
BH30UT	3	BH30ST	5
BH35UT	3	BH35ST	5
BH40UT	3	BH40ST	5
BH45UT	4	BH45ST	6
BH50UT	4	BH50ST	6

Figure 27: U-Tube (Horizontal)

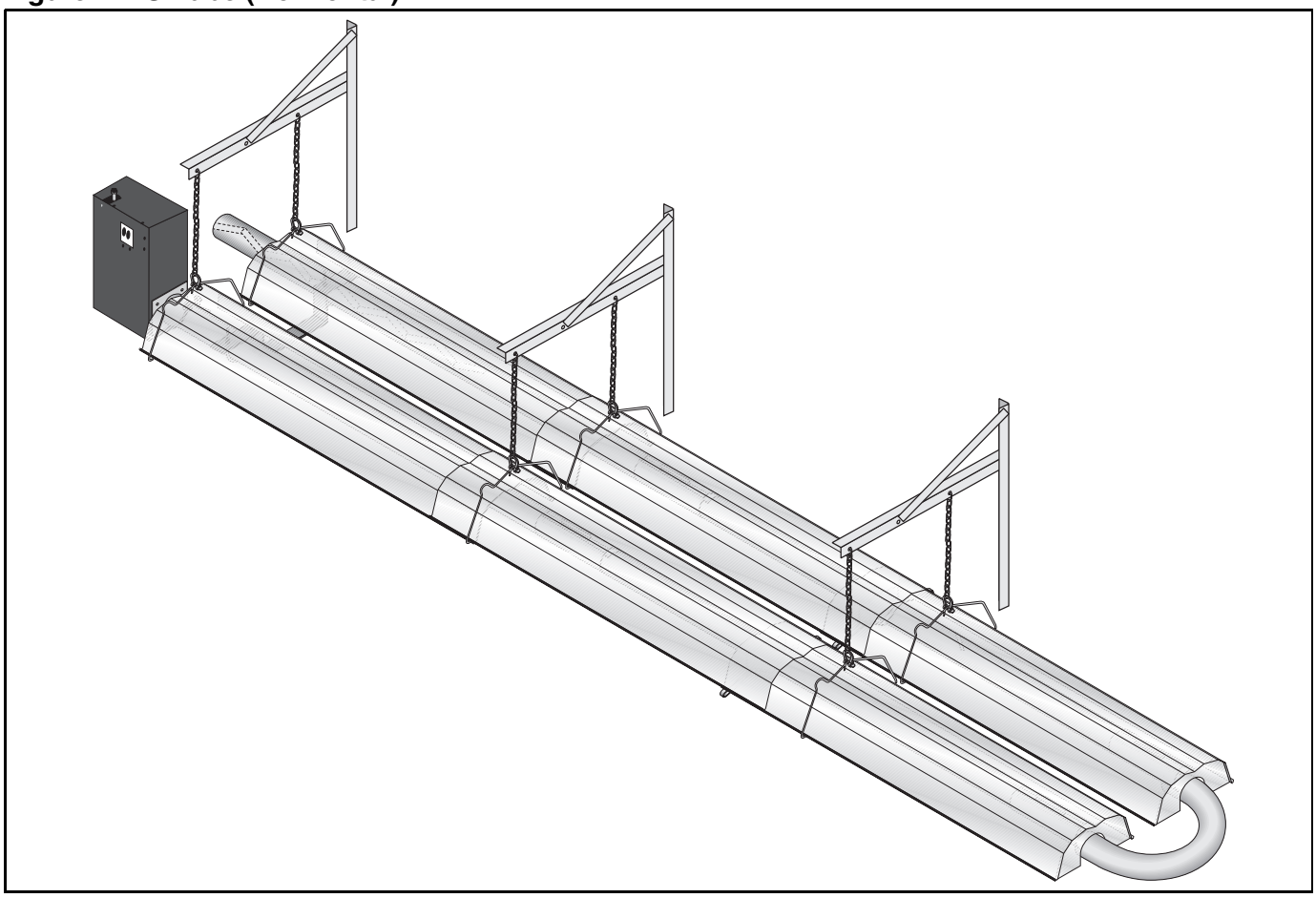


Figure 28: U-Tube (Angle Mounted)

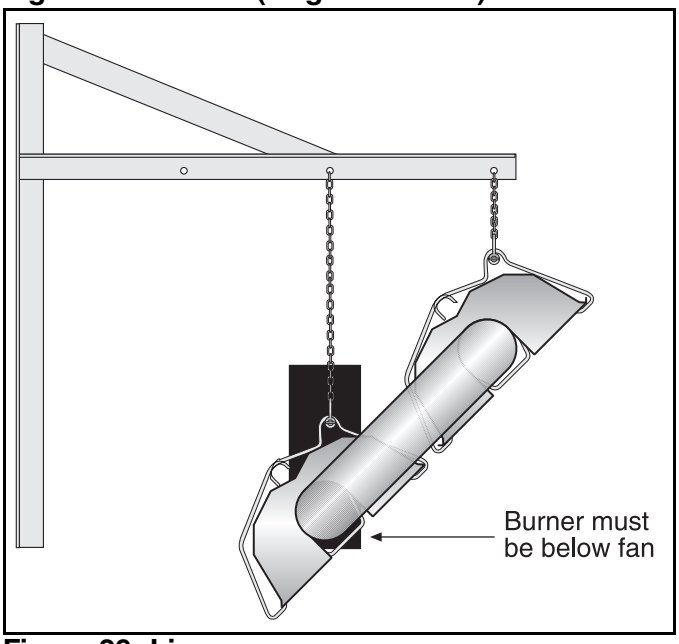
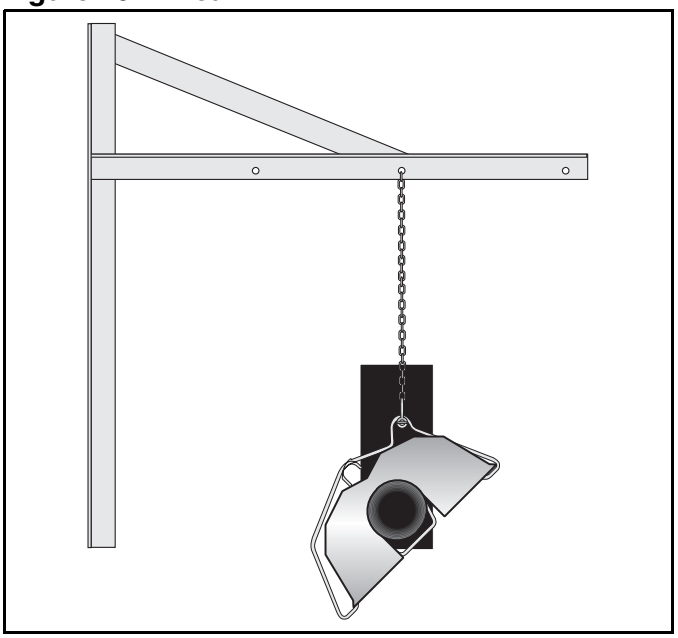


Figure 29: Linear



SECTION 11: VENTING

⚠WARNING

Carbon Monoxide Hazard

Unitary heaters installed unvented must be interlocked with sufficient building exhaust.

Heaters must be installed according to the installation manual.

Failure to follow these instructions can result in death or injury.

⚠WARNING

Cut/Pinch Hazard

Wear protective gear during installation, operation and service.

Edges are sharp.

Failure to follow these instructions can result in injury.

11.1 General Venting Requirements

Heaters may be installed flued or unflued but in all cases in accordance with the requirements of AS5601-2004 [or later].
If total heat input of appliances exceeds 0.2 MJ per cubic metre, all appliances must be flued.
If units are under thermostat control all appliances must be flued if total heat input exceeds 0.4 MJ per cubic metre.
Flues may be mandatory for some applications and must be fitted when specified.

11.1.3 Flue Installation

The fan outlet may discharge vertically or horizontally. Connection should be made using 100 mm minimum diameter aluminium or stainless steel flue material to National Standard and must be adapted to insert into the 100 mm flue adapter. Both fresh air supply and flue duct shall not exceed 10,000 mm. BH15 and BH20 flue must be insulated if longer than 5,000 mm. BH25 flue must be insulated if longer than 8,000 mm. Contact the manufacturer if more than 2 x 45° offset bends are necessary. The flue must be self supporting.

11.1.4 Flueless Installation

If the heater is being installed in an area where combustion products can be dissipated within the building, ensure that the fan outlet is horizontal and away from the burner. Where installation is close to a wall

(perimeter system) or other obstruction close to the fan outlet or wall angle mounted, install the heater so that the fan tube is the furthest away from the wall or obstruction, i.e. the fan will always blow into the building or away from the obstruction.

11.2 Ventilation Requirements

Detailed recommendations for air supply are given in the relevant National Standards. There must be an adequate supply of air for both combustion and general ventilation. Air vents should have negligible resistance. Do not locate air vents where they can be easily blocked or flooded, or adjacent to any flues or extraction systems carrying flammable vapour.

11.2.1 Flue Installation

Where the heater(s) is flued, the space containing it must have a permanent outside air vent with a minimum effective area of 4.5 cm^2 per kW of heat input. If mechanical ventilation is employed, the minimum proven airflow rate shall be 2.35 m^3/h per kW of heat input.

If the flue is to be horizontally vented through a wall, a wind-proof terminal must be fitted to outdoor vent pipe to prevent a back draught.

11.2.2 Flueless Installation

Flueless installation is permitted in accordance with the requirements of AS5601-2010 [or later] and details under Section 11.1.

External Installations:-
Flues may be required for external applications where, for example, the outdoor area [although normally open] may have blinds installed which can restrict the amount of fresh air available for the heater location.

Figure 30: Individual Flue Connection Detail

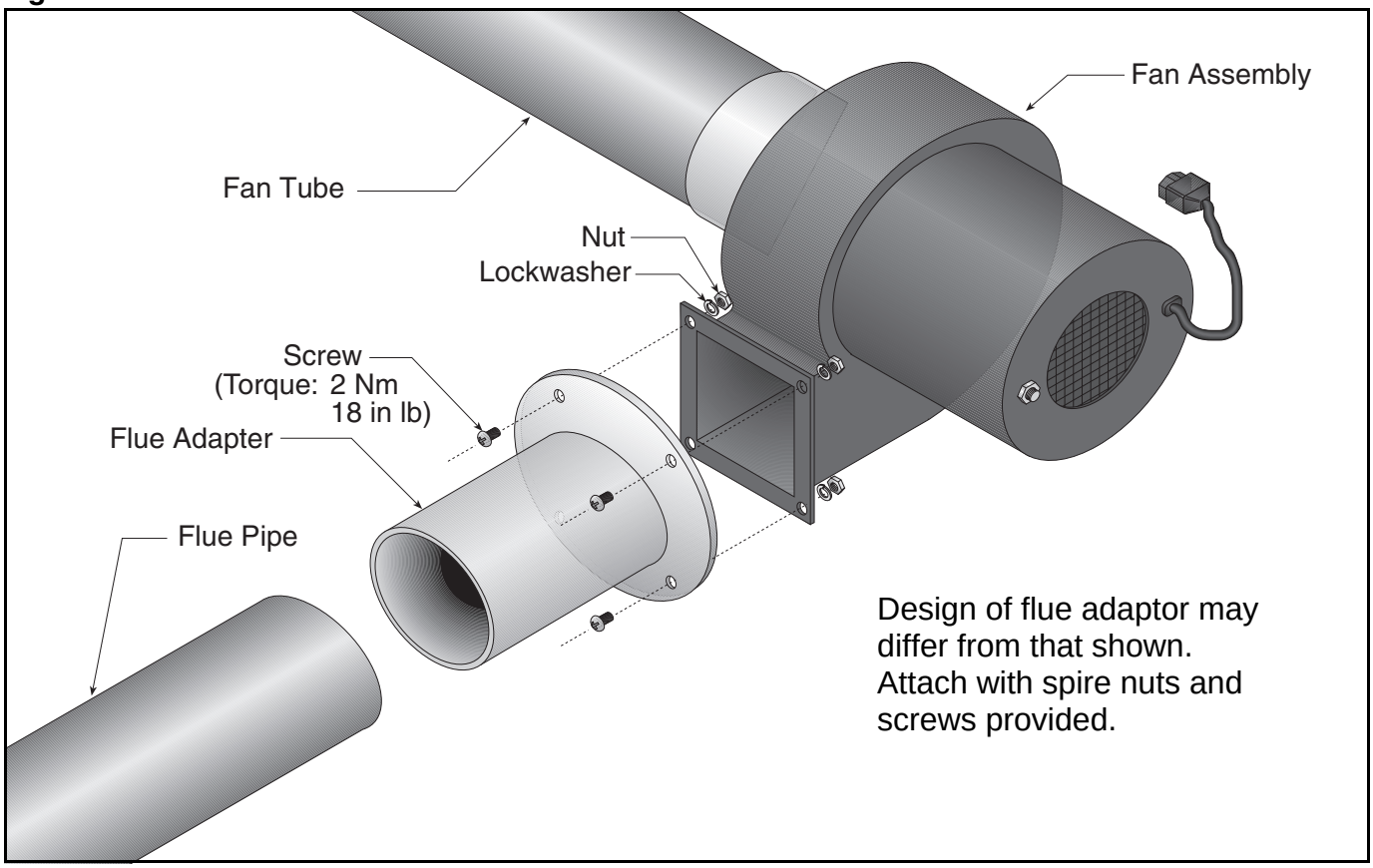
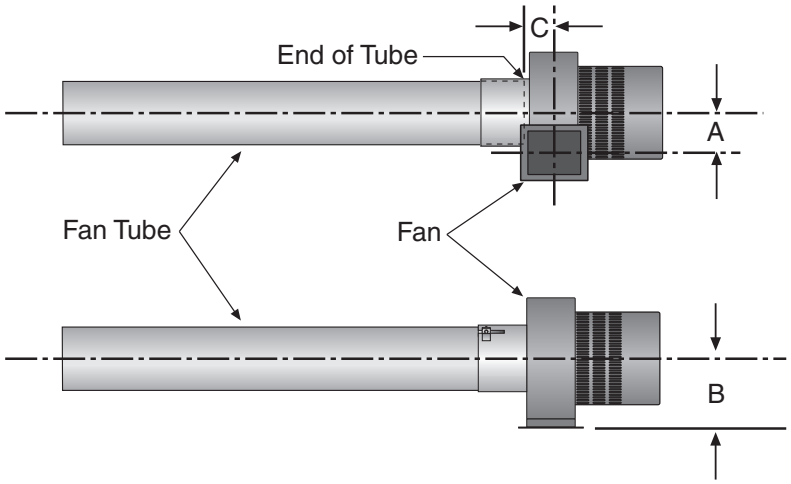


Figure 31: Flue Connection Dimensions



Heater Model	Fan Model	A	B	C	Part Number
BH 15-30	Torin DSF-133-42	79 mm	95 mm	45 mm	C2374B
BH 35-50	AO Smith JF1G	89 mm	102 mm	51 mm	90710000

11.3 Outside Combustion Air Supply

Where necessary, clean air may be ducted into the burner box through an added spigot on the back of the burner box replacing the existing dust arrest baffle plate.

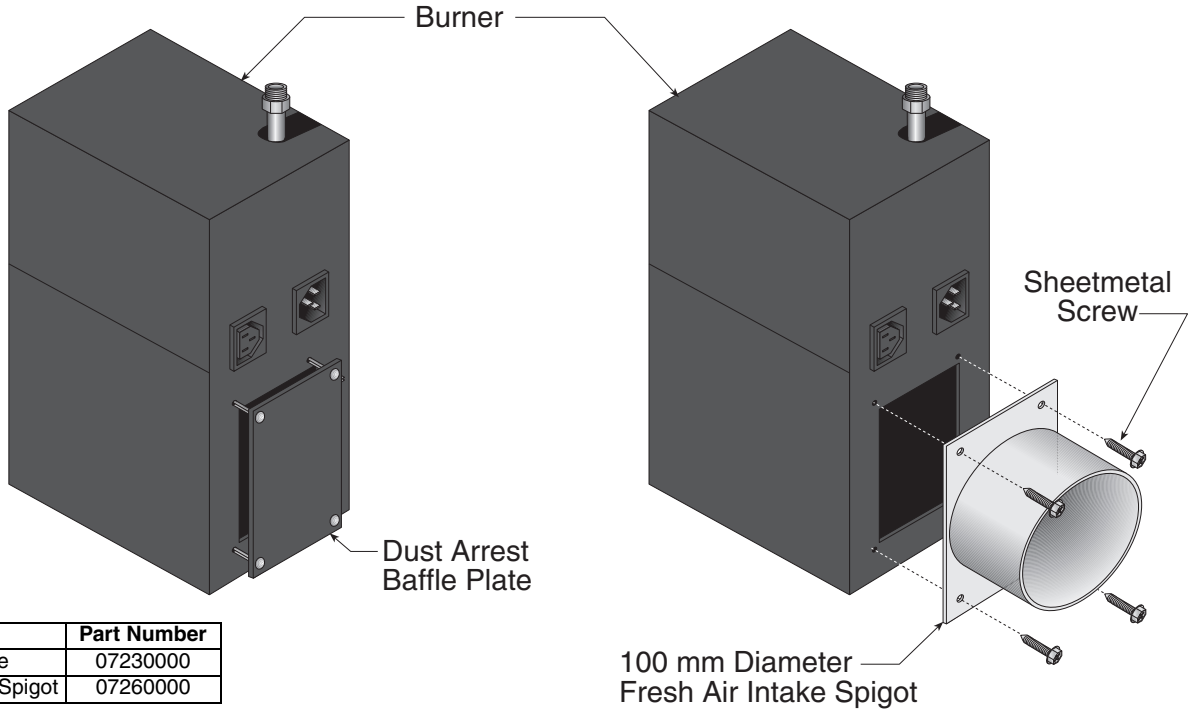
See Page 50, Section 11.1.3 for recommendations on duct length. Air duct should be as straight as possible. Do not use bends in excess of 45°. Consult the manufacturer if more than 2 x 45° offset bends are necessary. The fresh air duct must be self supporting.

11.3.1 Air Supply Requirements

When fresh air duct is used, follow one of these rules:

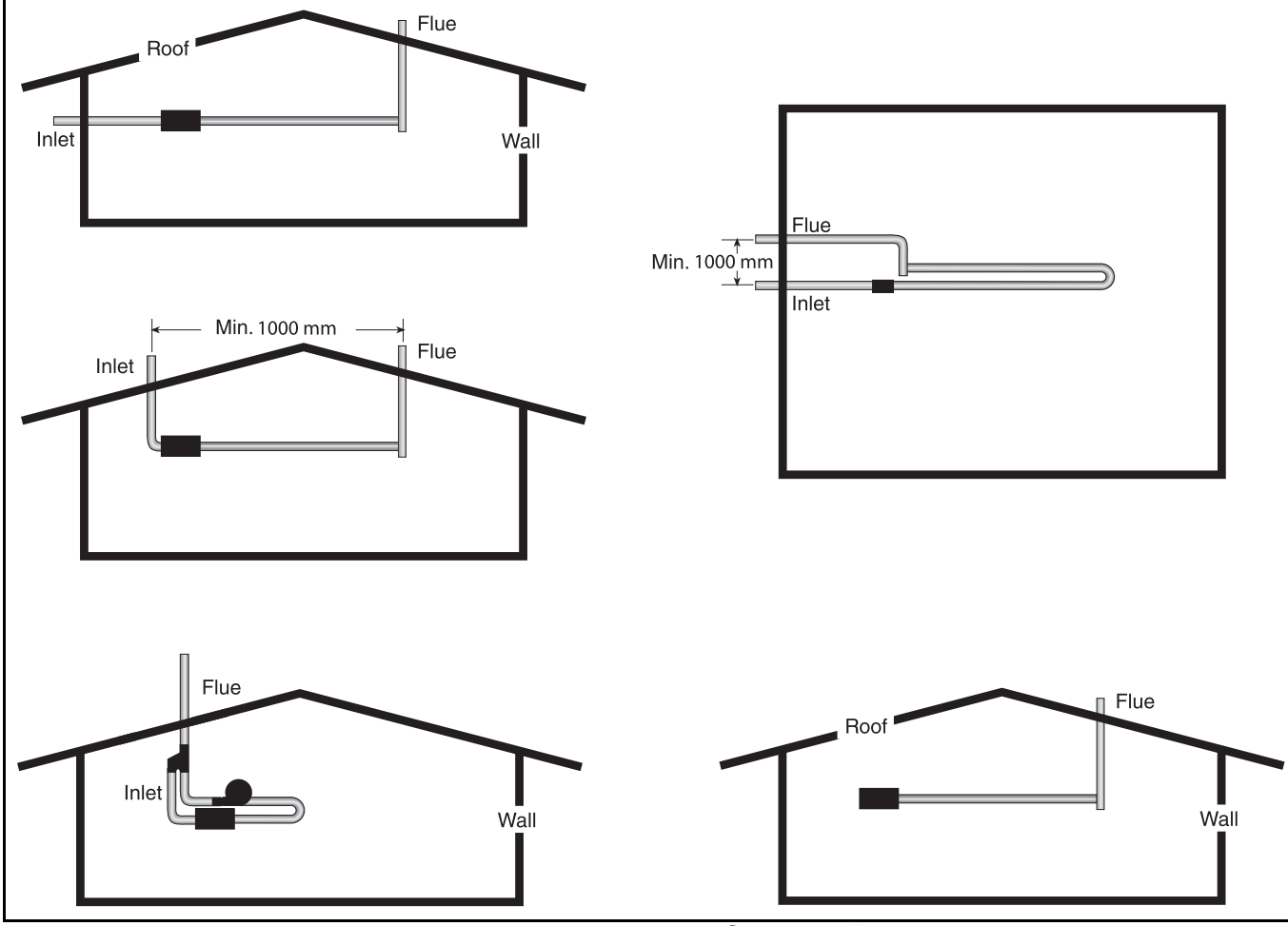
- The flue must penetrate the roof while fresh air can penetrate any wall. (*See Page 52, Figure 33*)
- The flue and fresh air supply must penetrate the same roof, at a minimum of 1 m apart. (*See Page 52, Figure 33*)
- The flue must penetrate 1 m higher than the fresh air inlet on the same wall. (*See Page 52, Figure 33*)

Figure 32: Fresh Air Intake Spigot



Description	Part Number
Dust Arrest Baffle	07230000
Fresh Air Intake Spigot	07260000

Figure 33: Air Supply with Flue Configurations



11.4 Common Duct

When using a common air inlet duct, always ensure that the area of the common air inlet duct represents the area of all air ducts.

SECTION 12: GAS PIPING

⚠WARNING

Fire Hazard

Tighten gas line fittings to connect gas supply according to Figure 34.

Flex gas line can crack when twisted.

Gas line moves during normal operation.

Use only 1000 mm long connector of 1/2" or 3/4" nominal ID.

Failure to follow these instructions can result in death, injury or property damage.

⚠WARNING

Explosion Hazard

Leak test all components of gas piping before operation.

Gas can leak if piping is not installed properly.

Do not high pressure test gas piping with heater connected.

Failure to follow these instructions can result in death, injury or property damage.

It is important that the gas supply pipe and electrical connections do not support any of the heater's weight.

Installation pipes should be fitted in accordance with National Standards. Pipe work from the meter to the heater(s) must be of adequate size. Pipes of smaller size than the heater inlet gas connection should not be used.

Install the gas hose as shown *on Page 54, Figure 34*. The gas hose accommodates expansion of the heating system and allows for easy installation and service of the burner. Before connecting the burners to the supply system, verify that all high pressure testing of the gas piping has been completed.

There is an expansion of the tube with each firing cycle. This will cause the burner to move with respect to the gas hose. This can cause a gas leak resulting in an unsafe condition if the gas connection is not made in strict accordance with *Figure 34*.

Meter and service must be large enough to handle all the burners being installed plus any other connected load. The gas hose which feeds the system must be large enough to supply the required gas with a maximum pressure drop of 13 mm wc. When gas piping is not included in the layout drawing, the local gas supplier will usually help in planning the gas piping.

IMPORTANT - the complete installation must be tested for gas soundness and be purged in accordance with local and national codes.

- **Check the pipe and tubing ends for leaks before placing heating equipment into service. When checking for gas leaks, use a soap and water solution; never use an open flame.**

Gas supply to appliances must be installed in accordance with AS5601-2010 [or later] and manufacturer's instructions.

Flexible gas hose assembly supplied with heater must be installed as per instructions below. Quarter-turn isolating valve must be installed upstream of the gas hose and NOT attached to the heater. Quarter-turn valve must be installed in an easily accessible location.